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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/579,576	05/25/2000	Ho-Jin Kweon	003364.P048	7384

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EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 01/03/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/579,576

Applicant(s)

KWEON ET AL.

Examiner

Wills M Monique

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Response to Amendment***

This Office Action is responsive to the RCE filed September 16, 2002.

The rejection of claims 1 & 3 under 35 U.S.C. 102(b) as being anticipated by Miyasaka U.S. Patent 5,869,208 is maintained. The rejection of claims 1-4 & 36 under 35 U.S.C. 103(a) as being unpatentable over Ikawa et al. U.S. Patent 5,922,491 and further in view of Lu et al. U.S. Patent 6,348,182 is maintained. The rejection of claims 5-7 under 35 U.S.C. 103(a) as being unpatentable over Ikawa et al. U.S. Patent 5,922,491 and further in view of Lu et al. U.S. Patent 6,348,182 is maintained. Further claims 1, 5, 8 & 9 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,146,790. Claims 10-35 are rejected under 35 U.S.C. §112 second paragraph. Claims 10-35 are also objected to.

### ***Claim Objections***

Claims 10-35 are objected to because of the following informalities: "AI" is misspelling of the aluminum symbol. Appropriate correction is required.

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***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The variables x, y, z, M' and M'' are defined in the body of claims 10-35, however the compound formula of each of said claims is missing at least one of said variables. Therefore, it is unclear as to what compounds applicant *is and* claiming. The claims have not been further treated on the merits.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application

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as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1,5,8 & 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Omaru et al. U.S. Patent 6,146,790.

The positive electrode active material was made as follows: 0.5 mol of Lithium carbonate was mixed with 1 mol of cobalt carbonate. The mixture of them was calcinated in air at a temperature of 900° C. for five hours. Further, 95 parts by weight of  $\text{LiCoO}_2$  powder was mixed with 5 parts by weight of Lithium carbonate powder. The positive electrode binding agent was prepared by mixing 91 parts by weight of them with 6 parts by weight of scaly graphite as conductive agent with 3 parts by weight of polyvinyliden fluoride as the binder. The positive electrode binding agent slurry (paste) was prepared by dispersing it with N-methylpyrrolidone. Next, a belt type copper film was prepared as a positive electrode current collecting body 11. After uniformly applying the positive electrode binding agent slurry as above mentioned on both surfaces of the positive electrode current collecting body 11 and drying it, the belt type positive electrode 2 was made by compression molding.

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***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 & 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyasaka U.S. Patent 5,869,208.

Miyasaka teaches a positive electrode including a lithiated transition and a carbonaceous metal, such as graphite or acetylene black (col. 12, lines 5-15) The lithiated transition metal may be selected from  $\text{Li}_x \text{MnO}_{2-z}\text{A}_z$  (No. 1 on Table 1) and  $\text{Li}_x \text{Mn}_{2-y}\text{M}'\text{A}_4$  (No. 2, 8, 25 & 29 on Table 1). Miyasaka teaches that the positive electrode sheet can be prepared by coating a mixture of lithium manganese-metal complex oxide, electroconductive material, binder and filler on a collectors. See column 8, lines 1-6. The filler include organic solvents such as polypropylene and polyethylene. See column 8, lines 43-48. The elements Co, Cr, Mg and Ce are added to lithium manganese dioxide. *The electrode may also include electrolytic solutions such as propylene carbonate or ethylene carbonate (col. 8, lines 45-55 & col. 9, lines 20-25).* Therefore, the instant claims are anticipated by Miyasaka.

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 & 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikawa et al. U.S. Patent 5,922,491 and further in view of Lu et al. U.S. Patent 6,348,182.

Ikawa teaches a positive electrode including a lithiated transition metal and a semi-metal additive including Al and B (col. 25, lines 60-65 and col. 26 lines 5-30). Metal oxides may also be included (col. 9 lines 25-35). The lithiated transition metal may be selected from  $\text{LiMnO}_2$  (col. 25, lines 60-65) (subject formula (1)). The additives were employed at 0.2% by weight (col. 25, lines 20-25). The reference also teaches the addition of a fluorine binder during preparation of the electrode.

The reference is silent to employing an organic solvent.

However, Lu teaches that it is conventional to employ organic solvents in order to prepare lithium manganese oxide spinel structures.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the organic solvent of Lu in the

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electrode of Ikawa, because the secondary reference teaches that it is well known in the art to use organic solvents to aid mixing of electrode material.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikawa et al. U.S. Patent 5,922,491 as applied to claim 1 above, and further in view of Lu et al. U.S. Patent 6,348,182.

Ikawa teaches a positive electrode including a lithiated transition metal and a semi-metal additive including Al and B (col. 25, lines 60-65 and col. 26 lines 5-30). Metal oxides may also be included (col. 9 lines 25-35). The lithiated transition metal may be selected from  $\text{LiMnO}_2$  (col. 25, lines 60-65). The additives were employed at 0.2% by weight (col. 25, lines 20-25). The positive electrode is made by the process of; mixing said constituents and applying the mixture to a current collector (col. 25, lines 20-35).

The reference is silent to adding an organic solvent to the mixture.



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However, Lu teaches that it is conventional to employ organic solvents in order to prepare lithium manganese oxide spinel structures.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the organic solvent of Lu in the electrode of Ikawa, because the secondary reference teaches that it is well known in the art to use organic solvents to aid mixing of electrode material.

### ***Response to Arguments***

Applicant's arguments filed 9/16/02 have been fully considered but they are not persuasive. Applicant contends that Miyasaka does not teach or suggest physically mixing in an organic solvent to form a slurry. However, in column 8, lines 48-53, the reference teaches that the electrode can further contain electrolytic solution including organic solvents listed in column 9, lines 30-40.

Applicant also asserts that Lu does not cure the deficiencies of Ikawa because there is no motivation to modify Ikawa. Lu was relied upon to demonstrate the conventionality of employing organic solvents to aid in mixing electrode material. It is well known in the art to employ the organic solvents in order to paste or coat the material on the current collector and Lu is evidence of such.

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**Conclusions**

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 703-308-2383.

The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

12/27/02

  
Patrick Ryan  
Supervisory Patent Examiner  
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